What is claimed is:

1. A wavelength monitor for detecting a wavelength variation of light outputted from a tunable laser source, comprising:

a first polarizer for forming light outputted from the tunable laser source into a linearly polarized beam with a polarizing angle of 45 degrees;

a beam splitter for dividing a beam transmitted through the polarizer into two beams;

first reflecting means for reflecting one of the two beams divided by the beam splitter and causing the reflected one to again enter the beam splitter;

a wave plate for performing $\lambda/8$ phase-shifting, the wave plate allowing the other of the two beams divided by the beam splitter to double-pass through the wave plate by being reflected by a second reflecting plate and causing the other to enter the beam splitter; and

a polarizing beam splitter for dividing output light recombined by the beam splitter into two mutually perpendicular components, and outputting the respective components to first and second photodetectors.

2. A wavelength monitor for detecting a wavelength variation of light outputted from a tunable laser source, comprising:

a first polarizer for forming light outputted from the tunable laser source into a linearly polarized beam with a polarizing angle of 45 degrees;

a beam splitter for dividing a beam transmitted through the polarizer into two beams;

a polarizing beam splitter and first and second reflecting means for recombining the beams divided by the beam splitter, separating the recombined beams into two mutually perpendicular polarized components, and outputting the respective components to first and second photodetectors as output light; and

a wave plate for performing $\lambda/4$ phase-shifting, the wave plate being inserted in either one of optical paths divided by the beam splitter.

3. A wavelength monitor for detecting a wavelength variation of light outputted from a tunable laser source, comprising:

a first polarizer for forming light outputted from the tunable laser source into a linearly polarized beam with a polarizing angle of 45 degrees;

a delay unit for vectorially decomposing light outputted from the first polarizer and delaying one of components with respect to the other;

a beam splitter for dividing light passed through the

delay unit into two beams;

a first photodetector for receiving one of the two beams divided by the beam splitter via a $\lambda/4$ phase-shifting wave plate and a second polarizer; and

a second photodetector for receiving the other of the two beams divided by the beam splitter via a third polarizer.

4. A wavelength monitor according to any one of claims 1 to 3, wherein a polarization maintaining fiber is used in place of the first polarizer.

5. A wavelength monitor according to any one of claims 1 to 3, wherein an additional beam splitter is inserted after the first polarizer to execute power-monitoring of divided beams outputted from the additional beam splitter.

6. A motor control device for driving a motor which is means for varying a wavelength of output light of a tunable laser source, comprising:

a wavelength monitor for monitoring part of the output light of the tunable laser source and detecting wavelength information;

a frequency multiplier for converting two $\pi/2$ phase-shifted periodical amplitude signals sent from the wavelength monitor into a digital signal corresponding to a wavelength

of the output light; and

a comparing circuit for finding a deviation between an output of the frequency multiplier and a command value,

the motor control device driving and controlling the motor according to a comparison deviation outputted from the comparing circuit.

7. A motor control device according to claim 6, wherein the tunable laser source is controlled to a constant level of power by power-monitoring for monitoring power of the output light of the tunable laser source.